

Claims

- [c1] 1. A method for modeling electric arc behavior, said method comprising the steps of:
determining electrical conductivity distribution in an arc;
determining a current density distribution of the arc based on the determined electrical conductivity.
- [c2] 2. A method according to Claim 1 wherein electrical conductivity distribution in the arc is determined using temperature and pressure distribution with an arc chamber.
- [c3] 3. A method according to Claim 1 wherein determining current density distribution comprises the step of determining electrical potential of the arc.
- [c4] 4. A method according to Claim 1 further comprising the steps of:
determining magnetic fields and Joule heating using the determined current density distribution; and
determining magnetic forces from the determined magnetic fields.
- [c5] 5. A method according to Claim 4 further comprising the step of determining gas dynamics field using the determined Joule heating and magnetic forces.
- [c6] 6. A system for modeling electric arc behavior, said system comprising:
a server computer;
a first client computer coupled to said server computer, said first client computer programmed to determine electrical conductivity distribution in an arc; and
a second client computer coupled to said server computer, said second client computer programmed to determine a current density distribution of the arc based on the determined electrical conductivity distribution.
- [c7] 7. A system according to Claim 5 wherein said first client computer is programmed to determine electrical conductivity distribution in the arc using temperature and pressure distribution with an arc chamber.

- [c8] 8. A system according to Claim 5 wherein said second client computer is programmed to determine electrical potential of the arc.
- [c9] 9. A system according to Claim 5 wherein said second client computer is further programmed to determine magnetic fields and Joule heating using the determined current density distribution, and magnetic forces from the determined magnetic fields.
- [c10] 10. A system according to Claim 9 wherein said second client computer is further programmed to determine gas dynamics field using the determined Joule heating and magnetic forces.

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